**Anticoagulation reversal**

Head Trauma in Patient Taking Anticoagulants
Order PT/INR, PTT CBC, BMP, CT brain, Chem8

- **INR < 1.5:** Consider discharge if normal exam and has reliable caregiver
- **INR > 1.5 or abnormal exam or alternative anticoagulant:** consider observation and repeat CT brain at 6 hrs

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**Injury on CT brain?**

- **No**
- **Yes**

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**What anticoagulants is the patient taking?**

- **How long ago was the last dose?**
- **What is the patient’s Cr?**
- **Note:** If unknown agent, consider check dilute thrombin time and heparin level (Anti-Xa)
- **Treatment based on bleeding not lab testing**

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**Warfarin (Coumadin)**
- Give vitamin K 10 mg IV
- Give KCentra based on INR (round to nearest vial)
  - INR 2-3.9: 25 units/kg (max 2500 units)
  - INR 4-6: 35 units/kg (max 3500 units)
  - INR >6: 50 units/kg (max 5000 units)
- Order INR 60 minutes after KCentra and follow q 6 hours.
  - Give FFP if INR > 1.4 within 24 hours after KCentra dosing.

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**Unfractionated Heparin**
- Give protamine sulfate 1 mg for every 100 u heparin in past 2-3 hours
  - (max 50 mg per dose)
- Order PTT 90 minutes post protamine dose
- **Not indicated for prophylactic UFH**
  - If PTT remains elevated 0.5 mg / 100 u heparin.
  - If protamine ineffective consider recombinant factor VIIa 20 mcg/kg every 2 hours as needed

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**Thrombolytics**
- If within previous 24 hours
- Cryoprecipitate 10 units
- Alternative TXA 10-15 mg/kg iv over 20 minutes
  - Check fibrinogen level
- If < 150 mg/dl repeat cryo

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**Aspirin, Dipyridamole (Aggrenox), Clopidogrel (Plavix), Prasugrel (Effient), Tricagrelor (Brilinta)**
- Consider platelet function testing if possible, only treat if abnormal
- Platelet transfusion (likely ineffective for ticagrelor) only for neurosurgical procedures
- Consider desmopressin 0.3 mcg/kg IV over 15 minutes
  - Platelet transfusion not indicated for Ib/IIa inhibitors

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**Direct Xa Inhibitor**
- [Rivaroxaban (Xarelto), Apixaban (Eliquis), Edoxaban (Savaysa)]
  - If last dose within 2 hours consider charcoal 50 g per NGT
  - Order: LMWH heparin level (Anti-Xa)
  - Give KCentra 25 u/kg (max 2500 units)
  - If ineffective consider 2nd dose of 25 units/kg, or low dose recombinant factor VIIa 20 mcg/kg

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**Clinical decision tree**

- What anticoagulants is the patient taking?
- How long ago was the last dose?
- What is the patient’s Cr?
- **Note:** If unknown agent, consider check dilute thrombin time and heparin level (Anti-Xa)
- **Treatment based on bleeding not lab testing**

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**Direct Thrombin Inhibitor Dabigatran (Pradaxa)**
- If last dose within 2 hours consider charcoal 50g per NGT
- Give Idarucizumab 5 gm IV (give 2.5 gm vial IV over 5 minutes followed by a second 2.5 gm vial IV over 5 minutes)
  - For ongoing bleeding consider repeat dose of idarucizimab, hemodialysis, low dose recombinant factor VIIa 20 mcg/kg, or Kcentra 25 – 50 units/kg

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**LMWH**
- If given in previous 8 hours
  - Enoxaparin (Lovenox): Give protamine 1mg per 1mg Dalteparin (Fragmin) 1mg per 100 units
    - (max protamine 50 mg per dose)
  - **Note:** For treatment dosing only, not indicated for prophylactic LMWH
- If LMWH given within 8-12 hours use 0.5 mg protamine
  - If protamine ineffective consider recombinant factor VIIa 20 mcg/kg every 2 hours as needed

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**Pentasaccharide (Fondaparinux)**
- Kcentra 25 units/kg (max 2500 units)
  - If ineffective consider low dose recombinant factor VIIa 20 mcg/kg

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Frontera et al Crit Care Med 2016; 44:2251